Attorney Docket No.: LYRN004US0

PATENTS
Customer No. 37,141

REMARKS:

Claims 1-22 are currently pending in the application, and have been rejected.

Prior to specifically addressing the rejections made by the Examiner, a brief overview of the cited art may be useful.

Bhat discloses a distributed network for cellular communications which is designed to minimize CPU resource consumption by determining whether a message received at an application processor is a paging message or a regular call control message (see Abstract). If the message is a paging message, certain components of the system which are not essential for processing paging messages are bypassed.

As noted at Col. 4, Lines 9-15 of Bhat, in prior art application processors, no distinction is made between a paging message and a regular call control message. Consequently, every message in such a system is processed through substantially every component in the CPU of the application processor (including the radio cluster servers), regardless of whether the message is a paging message or a regular call control message. This approach leads to a significant amount of wasted resources. In particular, as noted at Col. 4, Lines 50-57 of Bhat, even though the radio cluster servers and other components of the CPU add no additional functionality to a paging message, the radio cluster servers must still perform extraneous processing in order to recognize that the message is a paging message and to send the paging message to the communication module. Indeed, as noted at Col. 5, Lines 6-15 of Bhat, each paging message spawns a large number of additional messages by way of the radio cluster servers. This number is even larger in practice since, on average, every call attempt requires two pagings.

The solution Bhat proposes to the foregoing problem is to provide a distributed network interface module (element 318 in FIG. 3) which bypasses the radio cluster servers when the message being processed is a paging message (see Col. 5, Lines 54-60 and compare FIG. 3 to FIG. 2). Instead, the distributed network interface module sends the paging message directly to the communication module 320 by way of a direct link 326.

Rosenberg et al. discloses a routing strategy (that is, an addressing protocol) useful in a satellite communications system in which a number of ground-based sectors are serviced by a satellite communications network, with each individual satellite in the network forming a network node. The ground-based sectors contain a plurality of cells, and each of the cells contains a plurality of terminals.

Each of the ground-based sectors is provided with an address that incorporates a binary Gray code, and the appropriate routing of a packet of information that arrives at a satellite node within the network and that is addressed to a particular ground-based sector (and more particularly, to a particular terminal contained within a particular cell within a particular ground-based sector) is determined from the Gray code in the packet header. As depicted in FIGs. 7 and 9 of the reference, a satellite receiving the packet performs a Gray code analysis. If the analysis indicates that the destination of the packet is one of the cells covered by the satellite, then the packet is sent to the satellite downlink. Otherwise, the analysis determines which satellite in the network the packet should be forwarded to.

Reconsideration of the Examiner's rejection of claim 1 under 35 U.S.C. § 102(a) as being anticipated by U.S. 6,097,955 (Bhat) is respectfully requested.

In order to anticipate a claimed invention, a cited reference must disclose each and every element of the claimed invention. In the present case, Bhat does not anticipate the claimed invention, because Bhat does not disclose the element recited in claim 1 of

> if the message is not in the selected application format:
> routing the message to a next location; and
> if the message is in the selected format:
> routing the message to a selected application processor;
> processing the message by the selected application processor; and
> routing the message to the next location.

To the extent that the Examiner's argument can be followed, the Examiner appears to argue that the element of an "application format" is met in the system of Bhat by the status of a message

as a paging message or a regular call control message, and that the radio cluster servers 220-222 are the "application". The Examiner also appears to construe the data processors of the radio cluster servers as the "application processor".

However, the Examiner is respectfully reminded that he is not free to adopt an interpretation of a prior art reference which is at odds with the express teachings of the reference itself. In the present case, element 302 in the system of Bhat is explicitly labeled as the "application processor", and this element specifically includes as components thereof the radio cluster servers 322-324 and the communication module 320 (see FIG. 3). Hence, the Examiner is not free to designate another element, such as the radio cluster servers 322-324 or elements hereof, as the "application processor" because to do so would be to disregard the explicit teachings of the reference.

With the foregoing understanding, it is clear that Bhat does not anticipate the presently claimed invention because, in the system described therein, the message is routed to the application processor whether or not it is a paging message (that is, whether or not, under the Examiner's interpretation of Bhat, the message is in the "selected application format"). Hence, the recited element of claim 1 is not met by the system of Bhat.

Reconsideration of the Examiner's rejection of claims 2-6 and 19-21 under 35 U.S.C. § 102(a) as being anticipated by U.S. 6,097,955 (Bhat), and further in view of U.S. 6,560,450 (Rosenberg et al.), is respectfully requested.

As a preliminary matter, Applicants note that, although this rejection is styled as a novelty rejection, the actual grounds of rejection advanced by the Examiner touch instead on issues of obviousness. It is thus presumed that the Examiner meant to style this rejection as a rejection under 35 U.S.C. § 103(a), and Applicants have responded accordingly. If, on the other hand, the Examiner intended this rejection as a novelty rejection, then Applicants object to the rejection on the grounds that the Examiner has relied on multiple references and a theory of obviousness in making the rejection, and has thus failed to establish the statutory requisites for a novelty rejection.

In order to render a claimed invention obvious, a proposed combination of references must teach or suggest each and every element of the claimed invention. In the present case, the term

"application processor" is used in Bhat to include the distributed network interface module 318, the radio cluster servers 322-324, and the communication module 320 (see FIG. 3). Moreover, in the system of Bhat, all communications are routed from the interconnection ring 308 to the application processor 302 and then to the switching network 310. Hence, Bhat does not teach or suggest the element recited in claim 1 of

> if the message is not in the selected application format:
> routing the message to a next location; and
> if the message is in the selected format:
> routing the message to a selected application processor;
> processing the message by the selected application processor; and
> routing the message to the next location. [emphasis added]

This infirmity is not cured by Rosenberg et al., because Rosenberg et al., which is cited here as a secondary reference, does not teach or suggest modifying the application processor in the system of Bhat in a way that would result in the foregoing claim limitation being met. Thus, the proposed combination of Bhat and Rosenberg et al. do not support a prima facie case of obviousness.

With respect to claim 2, the Examiner concedes that Bhat does not teach the element of the message being a packet, but argues that

> it would have been obvious to one of the ordinary skill in the art at the time the invention was made the modified the teaching of Bath of incorporate the feature of packet because this provides the simple determination of the direction in which the packet should be routed over the network [sic].

However, Applicants respectfully note that the grey code package routing methodology described in Rosenberg et al. is peculiar to a satellite network. Since the satellites are in constant motion about the earth, the use of gray codes permits the satellites to efficiently route a message to the satellite currently in position to download to the appropriate ground-based cell.

However, there is nothing in Bhat which teaches or suggests the use of satellite nodes as components of the application processor. To the contrary, Bhat teaches at Col. 5, Lines 39-41, that "Each application processor 302, 304 and 306 is a computer adapted for processing call messages within the cellular communication system 300." [emphasis added] Moreover, when Bhat is construed as a whole for what it fairly suggests to one skilled in the art, the reference strongly

suggests that the components of the application processor 302 (and specifically, the distributed network interface module 318, the radio cluster servers 322-324, and the communication module 320 of the application processor 302) reside in a single CPU. Thus, at Col. 5, Line 60 to Col. 6, Line 17, Bhat notes that

> The improved distributed network interface module 318 and the improved communications module 320 may be implemented as distinct respective data processors or within one data processor.
>
> In a preferred embodiment of the present invention, the improved distributed network interface module 318 and the improved communications module 320 are software modules within the CPU of the application processor 302. Alternatively, the improved distributed network interface module 318 and the improved communications module 320 may be implemented as individual hardware units such as data processors.
>
> ... In a preferred embodiment of the present invention, the radio cluster servers 322-324 are software modules within the CPU of the application processor 302. Alternatively, the radio cluster servers 322-324 may be implemented as individual hardware units such as data processors. [emphasis added]

In light of the foregoing, one skilled in the art would have no incentive to modify Bhat to include packets of the type taught in Rosenberg et al. which contain grey codes, because the components of the application processor 302 of Bhat are disposed on a single CPU. Hence, there is no teaching in either reference to implement these elements as a satellite system. While it could be argued that a system of the type disclosed in Rosenberg et al could be employed in other parts of Bhat, doing so would not result in the invention as claimed.

With respect to claim 6, the Examiner relies on Rosenberg et al. for the teaching that the message is encrypted, and that the step of processing the message by the selected application processor includes decrypting the message by the selected application processor. Here, the Examiner points to Col. 5, lines 54-58 of Rosenberg et al., which says:

> The packets contain a header which includes a destination address and a sequence field. The payload in the packet contains the encoded user data, which can be from any kind of multimedia service and can include, for example, voice, video or data. The terminals at the edges of the satellite network carry out the coding and decoding of this data.

However, the Examiner is respectfully reminded that it is insufficient for the purposes of establishing a prima facie case of obviousness to merely find all of the features of a claimed invention in two or more prior art references. Rather, the Examiner must demonstrate that one skilled in the art would have incentive to make the proposed combination of teachings, and that the proposed combination would result in the invention as claimed.

In the present case, Applicants respectfully note that the "application processor" in the system of Bhat, even under the Examiner's proposed interpretation of the term, is not located at the edge of the network. Rather, it is located in the middle of the network and, in particular, is disposed between the interconnection ring 308 and the switching network 310. Rosenberg et al. does not teach or suggest modifying the location of the application processor, nor could the location of the application processor be changed without causing the system of Bhat to no longer work for its intended purpose.

The location of the application processor in the system of Bhat is significant because the section of Rosenberg et al. cited by the Examiner describes decoding the "encoded user date", which is said to reside in the packet payload. However, given its location in the middle of the network, one skilled in the art would have no motivation to modify the application processor of Bhat to cause it to perform decryption of the packet payload.

First of all, such decryption is not necessary to route the packet, since the packet destination information is contained in the packet header, not the payload. Secondly, decrypting the packet payload at this point in the network would compromise the security of the network because the message is not close to its destination and, hence, is subject to interception (in particular, the message must still traverse the switching network 310 and must then be transmitted to the appropriate cell to reach its destination). Thirdly, Rosenberg et al. itself teaches away from decryption in the middle of the network; hence, in the section cited by the Examiner, Rosenberg et al. notes that decryption occurs "at the edges of the satellite network". Fourthly, as shown by Col. 2, Lines 48-50 of U.S. 6,578,147 (Shanklin et al.) (cited by the Examiner elsewhere in the present office action), any legitimate process which might require decryption of the packet payload, such as intrusion detection, would occur at an entry point to the network, not in the middle of the network.

Moreover, the proposed combination of references does not teach the necessity or desirability of decoding the message with the application processor. In particular, Rosenberg et al. teaches a packet structure in which the header information, which contains the destination address, is separate from the message payload. See Col. 5, Lines 54-58. Hence, it is not necessary to decode the packet payload in order to determine the packet destination. Indeed, Rosenberg et al. teaches as much by suggesting, in the cited passage, that the terminals at the edge of the satellite network carry out encoding and decoding of the payload.

Reconsideration of the Examiner's rejection of claims 7-12, 14 and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,560,450 (Rosenberg et al.) in view of U.S. 6,578,147 (Shanklin et al.), is respectfully requested.

The Examiner argues that the terminals at the edge of the network in the system of Rosenberg et al. constitute particular "applications". While Applicants acknowledge that the Examiner is entitled to interpret claim terminology broadly for the purposes of examination, this liberty is not unfettered. Rather, the meaning which the Examiner assigns to claim terminology must be consistent with the meaning which would be assigned to it by one skilled in the art.

In the present case, one skilled in the art would not consider the terminals at the edge of the network in the system of Rosenberg et al. to be "applications", nor has the Examiner provided any explanation for this rather tenuous interpretation of the claim terminology. A definition of the term "application", provided from Webopedia, is set forth in EXHIBIT A. As seen therein, the term refers to software, not hardware, so it is not possible for the terminals at the edge of the network in Rosenberg et al. to constitute "applications".

Moreover, the term cannot refer to the software installed on these edge terminals, because then the packets would not constitute "application-specific messages" as required by the claims. In particular, the claims require that "the plurality of application-service devices are configured to receive a plurality of unprocessed application-specific messages from the fabric" and that "each unprocessed application-specific message is configured to be processed by a particular application". However, nothing in Rosenberg et al. indicates that the packets described therein are configured to

be processed only by the particular set of software installed on a particular edge terminal. To the contrary, in order for the network to work for its intended purpose, the software installed on any given edge terminal would have to be adapted to process any packet sent to it by one of the satellite nodes, and other software installed on other edge terminals in the network would also have to be adapted to process the packet, since any packet transmitted over the satellite network must traverse at least two different edge terminals. Hence, under such an interpretation of the term "application", the packets would not be "application-specific" as that term is used in the claim.

The Examiner also argues that the satellite nodes are application service devices. However, claim 7 requires that "the fabric is adapted to route each of the plurality of unprocessed application-specific messages to an application service device adapted to process the message with the particular application". If the terminals at the edge of the network are "applications" as the Examiner alleges, then it is the terminals at the edge of the network, and not the satellite nodes themselves (the so-called "application service devices"), that process the message. Hence, the interpretation proposed by the Examiner would not result in the claimed invention as it must in order to support the obviousness rejection.

Moreover, claim 7 requires that "the plurality of application service devices are configured to receive a plurality of unprocessed application-specific messages from the fabric". Claim 7 also requires that "the plurality of application service devices are further configured to process the unprocessed application-specific messages" and that "the plurality of application service devices are further configured to send the each processed application-specific message to the fabric". Under the Examiner's interpretation, the terminals at the edge of the satellite network are the "applications", and the satellite nodes are the "application service devices". That being the case, claim 7 requires a directionality in the system of Rosenberg et al., because the claim requires, under the Examiner's interpretation, that the satellite node send a message to the edge terminal for processing.

However, in the system of Rosenberg et al., the satellite nodes only send messages to the edge terminals during a download operation. Once the download operation is complete, the message processed by the edge terminal is not returned to the satellite node. Hence, under the Examiner's interpretation, the system of Rosenberg et al. fails to meet the limitation of "the

plurality of application service devices are further configured to send the each processed application-specific message to the fabric".

With further respect to claim 7, the Examiner concedes that Rosenberg et al. does not teach the element of processing the messages in parallel, but relies on Shanklin et al. for this teaching. In particular, the Examiner refers to Col. 2, Lines 64-66 of Shanklin et al., which teaches that "The sensors operate in parallel, and analyze packets to determine if any packet or series of packets has a signature that matches one of a collection of known intrusion signatures". The Examiner argues that one skilled in the art would have incentive to combine the references because "Shanklin et al.'s process would determine if there is an attempt to gain unauthorized access to the network."

One problem with the Examiner's argument is that the Examiner has already pointed to the step of "processing" the messages as referring to encoding/decoding of the messages by the edge terminals. Hence, in order for the Examiner's argument with respect to Shanklin et al. to be logically consistent with the rest of his argument, it is the step of encoding/decoding described in Rosenberg et al. which must occur in parallel. However, doing this step in parallel would not achieve the stated aim (advanced by the Examiner as incentive for combining Rosenberg et al. and Shanklin et al.) of determining if there is an attempt to gain unauthorized access to the network. Hence, the Examiner has failed to provide proper incentive for combining the teachings of the cited references.

With respect to claim 10, the Examiner asserts that Shanklin et al. teaches the element of a plurality of application service devices included in a single integrated circuit, and points to Col. 6, Lines 65-67. This portion of Shanklin et al. states that "Either session-based or packet-based load balancing may be used with any of the three techniques for distributing packets." Applicants respectfully note that this language is totally irrelevant to the Examiner's hypothesis, nor is there any other portion of Shanklin et al. that appears to cure this infirmity. Thus, the Examiner has failed to show how Shanklin et al. teaches this element of the claimed invention.

In addition, as noted above, the Examiner has argued with respect to the base claim that the satellite nodes in Rosenberg et al. are the application service devices. Clearly, however, a plurality of satellite nodes cannot be included in a single integrated circuit. Hence, the Examiner has failed to establish a prima facie case of obviousness with respect to claim 10.

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Reconsideration of the Examiner's rejection of claims 13 and 15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,560,450 (Rosenberg et al.) in view of U.S. 6,578,147 (Shanklin et al.), and further in view of Troubleshooting (TB), is respectfully requested.

The Examiner concedes that neither Rosenberg et al. nor Shanklin et al. teach the element of at least one of the application service devices comprising an SSL/TLS processor, but relies on TB for this teaching. However, the Examiner is respectfully reminded that it is insufficient for the purposes of establishing a prima facie case of obvious to merely find a collection of references which, as an aggregate, happen to disclose all of the elements of a claimed invention. Rather, the Examiner must show that TB would suggest to one skilled in the art to modify the teachings of Rosenberg et al. and Shanklin et al. so as to arrive at the claimed invention.

In the present case, TB is essentially a glossary which, at best, merely shows that SSL/TLS is a protocol which is known to the art. The reference does not, by itself, provide any suggestion about how Rosenberg et al. or Shanklin et al. might be modified to include such a protocol. The Examiner suggests that it would have been obvious to one of ordinary skilled in the art at the time the invention was made to combine the teachings of Rosenberg et al., Shanklin et al. and TB because the SSL/TLS protocol would improve the performance of the systems of Rosenberg et al. and Shanklin et al. by allowing them to implement encryption acceleration hardware. However, claim 13 specifically requires that at least one of the plurality of application service devices comprises an SSL/TLS processor. In rejecting the base claim, the Examiner interpreted the satellite nodes of Rosenberg et al. to be the application service devices. Hence, for the Examiner's current rejection to be logically self-consistent, one of the satellite nodes of Rosenberg et al. must be an SSL/TLS processor.

However, one skilled in the art would have no incentive to utilize one of the satellite nodes of Rosenberg et al. as an SSL/TLS processor. SSL/TLS processors are computationally intensive and require a large amount of information storage and processing. As noted at Col. 2, Lines 5-15, the cost of placing assets of this type in space is considerable, and hence would be undesirable. Therefore, if one skilled in the art were to modify the system of Rosenberg et al. to include an

SSL/TLS processor, one skilled in the art would place such a processor in a ground-based system, where the implementation would be far less expensive. Hence, the Examiner has failed to show the desirability of the proposed combination of teachings. Moreover, if the SSL/TLS processor were implemented in a ground-based system, then the proposed combination of references would not result in the claimed invention, since none of the satellite nodes of Rosenberg et al. (which the Examiner has interpreted as the application service devices) would be SSL/TLS processors.

With respect to claim 15, the Examiner's arguments are similar to his arguments with respect to claim 13. Hence, Applicants' response to these arguments is similar to their response to the Examiner's arguments with respect to claim 13.

Reconsideration of the Examiner's rejection of claim 22 under 35 U.S.C. § 102(a) as being anticipated by U.S. 6,097,955 (Bhat), and further in view of U.S. 6,820,250 (Muthukumar et al.), is respectfully requested.

As a preliminary matter, Applicants note that, although this rejection is styled as a novelty rejection, the actual grounds of rejection advanced by the Examiner touch instead on issues of obviousness. It is thus presumed that the Examiner meant to style this rejection as a rejection under 35 U.S.C. § 103(a), and Applicants have responded accordingly. If, on the other hand, the Examiner intended this rejection as a novelty rejection, then Applicants object to the rejection on the grounds that the Examiner has relied on multiple references and a theory of obviousness in making the rejection, and has thus failed to establish the statutory requisites for a novelty rejection.

The Examiner concedes that Bhat does not teach a first and second iteration as recited in the claim, and also does not teach a pipeline. However, the Examiner relies on Muthukumar et al. for these elements. Specifically, the Examiner argues that it would be obvious to modified the teaching of Bhat to incorporate the features of iteration and a pipeline because doing so "allows the system to improve the performance of software pipeline loops."

However, Applicants respectfully note that the Examiner has employed circular logic in making the present rejection. In particular, the Examiner has not established that the system of Bhat contains a software pipeline loop and, indeed, has conceded that Bhat does not teach a pipeline. It thus cannot be said that one skilled in the art would have any incentive to improve the

performance of the software pipeline loop of Bhat as the Examiner suggests, given that no such pipeline exists. It is therefor respectfully submitted that the Examiner has failed to provide suitable incentive for one skilled in the art to modify Bhat in light of Muthukumar et al. in the manner suggested.

It is believed that no further fees are due with this response. However, if any fees are due, or if a credit is deemed appropriate, the Commissioner is hereby authorized to charge these fees, or to credit any overpayment, to the deposit account of Fortkort & Houston, Deposit Account No. 50-3694. Please reference our Docket No. LYRN004US0.

Respectfully submitted,

FORTKORT & HOUSTON P.C.

Dated: November 13, 2007

By: _____
John A. Fortkort
Reg. No. 38,454

9442 N. Capital of Texas Hwy
Arboretum Plaza One; Suite 500
Austin, Texas 78759
Telephone: (512) 343-4525
Facsimile: (512) 343-4530
jfortkort@foholaw.com

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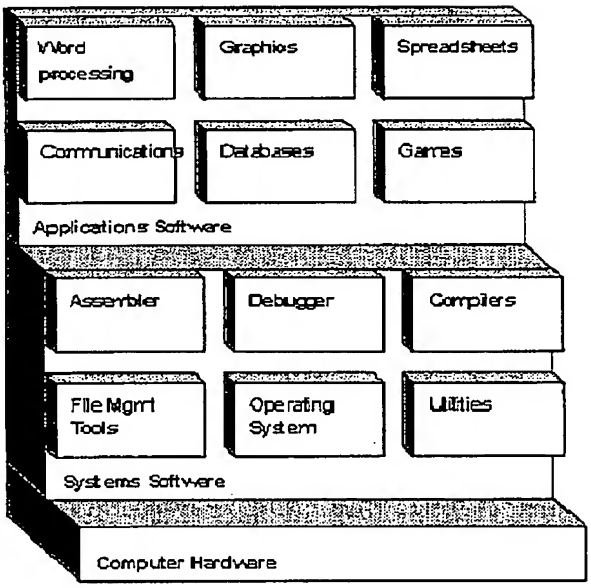
EXHIBIT A:
(Definition of Application from Webopedia
http://72.14.209.104/search?q=cache:194s5z1YQY8J:www.webopedia.com/application.html+definition+of+%22application%22+&hl=en&ie=UTF-8)

application

Last modified: Wednesday, February 12, 2003



A program or group of programs designed for end users. Software can be divided into two general classes: *systems software* and *applications software*. Systems software consists of low-level programs that interact with the computer at a very basic level. This includes operating systems, compilers, and utilities for managing computer resources.

In contrast, applications software (also called *end-user programs*) includes database programs, word processors, and spreadsheets. Figuratively speaking, applications software sits on top of systems software because it is unable to run without the operating system and system utilities.

Also see a diagram of n-tier **application** architecture in the quick reference section of Webopedia.